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Docket No. 2001-067-TAP

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: **Mehlberg et al.**	§	
	§	Group Art Unit: **2876**
Serial No. **10/034,065**	§	
	§	Examiner: **Kim, Ahshik**
Filed: **December 19, 2001**	§	
	§	
For: **Barcode Single Laser Scanner Targeting**	§	
	§	

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

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By: Jane M. Roberts
Jane M. Roberts

SUPPLEMENTAL APPEAL BRIEF (37 C.F.R. 41.37)

This brief is in furtherance of the Request for Reinstatement of Appeal, filed herewith.

The fees required under § 41.20(B)(2), and any required petition for extension of time for filing this brief and fees therefore, are dealt with in the accompanying TRANSMITTAL OF REQUEST FOR REINSTATEMENT OF APPEAL.

REAL PARTY IN INTEREST

The real party in interest in this appeal is the following party: Storage Technology Corporation

RELATED APPEALS AND INTERFERENCES

With respect to other appeals or interferences that will directly affect, or be directly affected by, or have a bearing on the Board's decision in the pending appeal, there are no such appeals or interferences.

STATUS OF CLAIMS

A. TOTAL NUMBER OF CLAIMS IN APPLICATION

Claims in the application are: 1-34

B. STATUS OF ALL THE CLAIMS IN APPLICATION

1. Claims canceled: 12-14
2. Claims withdrawn from consideration but not canceled: none
3. Claims pending: 1-11 and 15-34
4. Claims allowed: none
5. Claims rejected: 1-11 and 15-34

C. CLAIMS ON APPEAL

The claims on appeal are: 1-11 and 15-34

STATUS OF AMENDMENTS

There are no amendments after final rejection. Therefore, Claims 1-11 and 15-34 on appeal herein are as amended in the Response to Office Action filed July 19, 2004.

SUMMARY OF CLAIMED SUBJECT MATTER

A. CLAIM 1 - INDEPENDENT

The subject matter of Claim 1 is directed to a robot comprising a configuration of components disposed to determine the location of a component with respect to a target associated with a library storage cell. This configuration is illustrated in **Figure 6** and described at page 11, line 12 through page 12, line 30, and usefully includes a barcode scan apparatus **602**. The application teaches at page 11, lines 15-16 that scan apparatus **602** is affixed to a robot arm **110**, shown in **Figure 3**. The application teaches at page 13, lines 10-11, that scan apparatus **602** is associated with a scan path **612**. It is further taught, at page 11, lines 17-19 and page 12, lines 1-9, that scan apparatus **602** comprises a laser barcode scan engine **604** and an aperture **606**, having an aperture opening **610**. **Figure 6** shows aperture **606** comprising a number of walls positioned around scan engine **604**, including two wall sections on opposing sides of aperture opening **610**. The inner surfaces of these wall sections attenuate or reduce uncontrolled portions of the scan beam produced by scan engine **604**, to provide scan apparatus **602** with a scan path having a scan width **612**. More particularly, it is taught at page 12, lines 15-19, and shown by **Figure 6**, that these attenuation surfaces of aperture **606** are situated to reduce scan width, so that the scan width **612** is made uniform or non-variable. By making the scan width non-variable, these attenuation surfaces of aperture **606** form a controlled end of scan. Use of the controlled end of scan to determine the position of the robot arm **110** with respect to a target, and to thus determine the location of scan apparatus **602** and the attenuating surfaces of aperture **606**, is described at page 12, lines 20-30.

B. CLAIM 15 - INDEPENDENT

The subject matter of Claim 15 is directed to a positional determination device. Respective components of the Claim 15 device are similar to those of Claim 1. Accordingly, the determination device of Claim 15 is likewise taught in the

application at **Figure 6** and at page 11, lines 12 through page 12, line 30. Thus, the barcode scanner of Claim 15 may compromise scan apparatus **602**, providing a scan path of scan width **612** and affixed to a moveable object such as robot arm **110**. Scan apparatus **602** comprises scan engine **604** and aperture **606**, wherein aperture **606** is provided with surfaces located to attenuate a beam produced by scan engine **604**. At least one end of the scan path **612** resulting from the attenuated beam is thereby controlled by the attenuating surfaces, to form a controlled end of scan, and used to determine location of robot **110** with respect to a target or other external object.

C. CLAIM 16 - INDEPENDENT

The subject matter of Claim 16 is directed to a library storage system comprising a plurality of storage cells, at least some cells including a target, and further compromising a robot. **Figure 3** shows a plurality of tape cartridge storage cells **130**. As described in the application at page 8, lines 4-20, **Figure 3** also shows a number of targets **300** included with a plurality of storage cells **130**. The robot of Claim 16 is taught to include a barcode scanner, an attenuating surface and other features similar to those recited in Claim 1. Accordingly, the robot of Claim 16 is illustrated by **Figure 6** of Applicant's drawings, and described at page 11, line 12 through page 12, line 30 thereof.

D. CLAIM 23 – INDEPENDENT

The subject matter of Claim 23 is directed to a method for determining the position of a robot relative to a target. The application at page 11, lines 12-16, teaches that a barcode scan apparatus **602** can be mounted upon a robot arm **110**, as camera vision system **360** shown in **Figure 3**, so that scanner or scan apparatus **602** moves in unison with robot **110**. **Figure 3** also shows the robot arm **110** positioned for movement relative to a target **300**. The application at page 12, lines 1-19, together with **Figure 6**, teaches that scan apparatus **602** includes a scan engine **604** that provides a scan path having a scan path width, and moves in a direction parallel to the direction of movement of robot **110**, as shown in **Figure 6**. Scan apparatus **602** further includes an aperture **606** having attenuating surfaces to control the scan path

width **612**. The application at page 12, lines 22-27, teaches determining a first parallel position at which the target first becomes readable, and determining a second parallel position at which the target first becomes unreadable.

E. CLAIM 29-INDEPENDENT

The subject matter of Claim 29 is directed to a system for determining the position of a robot relative to a target. The application at page 11, lines 12-16, teaches that a barcode scan apparatus **602** can be mounted upon a robot arm **110**, as shown in **Figure 3**. **Figure 3** also shows the robot arm **110** positioned for movement relative to a target **300**. The application at page 12, lines 1-19, together with **Figure 6**, teaches that scan apparatus **602** includes a scan engine **604** that provides a scan path having a scan path width 612, and moves in a direction parallel to the direction of movement of the robot **110**, as shown in **Figure 6**. Scan apparatus **602** further includes an aperture **606** having attenuating surfaces to control the width of the scan path. **Figure 1** shows robot arm **110** mounted for movement in and movable by a first means, comprising an array **120** described at page 7, lines 4-15. As shown in **Figure 6** and described at page 12, lines 22-27, second and third means for determining first and second parallel positions at which the target first becomes readable and then unreadable, respectively, comprise the left side of target **608**, and the right side thereof.

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

A. GROUND OF REJECTION 1 (Claims 1-11, 15 and 16-22)

Claims 1-11, 15 and 16-22 stand rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement.

B. GROUND OF REJECTION 2 (Claims 23, 26, and 29)

Claims 23, 26 and 29 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,138,909, to Rockwell et al.

C. GROUND OF REJECTION 3 (Claims 24-25, 27-28, and 30-34)

Claims 24-25, 27-28 and 30-34 stand rejected under U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,138,909, to Rockwell et al.

ARGUMENT

A. GROUND OF REJECTION 1 (Claims 1-11, 15 and 16-22)

Claims 1-11, 15 and 16-22 stand rejected under 35U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement.

A.1. Background of Reinstatement of Appeal

On October 5, 2004, the Examiner mailed a final Office Action in the present application. In the final Office Action the Examiner took the following actions in regard to pending Claims 1-10 and 15-34:

(1) Claims 1-10 and 15 were rejected under 35 U.S.C. § 112, first paragraph, for lack of enablement.

(2) Claims 1-10 and 15 were also rejected under 35 U.S.C. § 112, second paragraph, as being indefinite.

(3) Claims 16, 20-22, 23, 26 and 29 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,138,909, to Rockwell et al.

(4) Claims 17-19, 24-25, 27-28 and 30-34 were rejected under 35 U.S.C. § 103(a) as being obvious in view of the Rockwell patent.

On December 22, 2004, Applicants filed a Notice of Appeal, to appeal the rejection of Applicants' pending claims. On February 15, 2005, Applicants filed an Appeal Brief, setting forth arguments to overcome all of the above rejections. All arguments and other comments of Applicants set forth in their Appeal Brief are incorporated herein by reference.

On June 6, 2005, the Examiner mailed a non-final Office Action in the present application. In the non-final Office Action the Examiner expressly withdrew the final Office Action of October 5, 2004. In addition, the Examiner took the following actions in regard to pending Claims 1-11 and 15-34:

(1) Claims 1-11, 15 and 16-22 were rejected under 35 U.S.C. § 112, first paragraph, for lack of enablement.

(2) Claims 23, 26 and 29 were rejected under 35 U.S.C. § 102(b) as

being anticipated by the Rockwell patent.

(3) Claims 24-25, 27-28, and 30-34 were rejected under 35 U.S.C. § 103(a) as being obvious in view of the Rockwell patent.

A comparison of the respective actions of the final Office Action of October 5, 2004, and the Office Action of June 6, 2005 disclose the following:

(1) The previous rejection of Claims 1-10 and 15 under 35 U.S.C. 112, second paragraph, has now been withdrawn.

(2) The previous art rejections of Claims 16-22, that is, rejections under 35 U.S.C. § 102 or §103 based on the Rockwell patent, have now been withdrawn.

(3) Claims 16-22, as well as Claim 11, are now rejected under 35 U.S.C. § 112, first paragraph, along with Claims 1-10 and 15. The reasons given for this rejection, in the Office Action of June 6, 205, appear to be somewhat different than the reasons given in the previous final Office Action.

(4) The reasons given for rejecting Claims 23-34, under 35 U.S.C. § 102 and § 103 based on Rockwell, appear to be identical to the reasons for rejecting these claims in the previous final Office Action.

On August 26, 2005 and September 2, 2005, the Examiner and Applicants' attorney discussed the 35 U.S.C. § 112, first paragraph, rejection in the Office Action of June 6, 2005. The Examiner indicated that Claim 1 would overcome this 35 U.S.C. § 112 rejection if "attenuation surface" in line 7 of Claim 1 was replaced with "barcode scanner". Applicants, through their attorney, express appreciation to the Examiner for this action, and also for providing the opportunity for these discussions. However, the discussions did not result in any claims, with or without amendment, becoming allowable. Accordingly, after due consideration, Applicants determined that it was necessary to reinstate their Appeal.

A.2. Essential Elements of Claims 1, 15 and 16

Claim 1 of the present application reads as follows:

1. A robot, the robot comprising:
a barcode scanner with a scan path, wherein the barcode scanner is

affixed to the robot;

an attenuation surface affixed to the barcode scanner, wherein the attenuation surface is located such that at least one end of the scan path of the barcode scanner is controlled by the attenuation surface to form a controlled end of scan, and wherein the controlled end of scan is used to determine a location of the attenuation surface with respect to a target associated with at least one storage cell within a storage library.

Applicants consider that it is essential to have the following terms and elements correctly understood, as such terms are taught and used in their specification and in Claims 1, 15 and 16:

(1) attenuation surface

(2) controlled end of scan

(3) controlled end of scan used to determine a location of the attenuation surface with respect to a target

A.3. **Teachings of Applicants' Specification in Support of Claims 1, 15 and 16**

In making their invention, Applicants sought to provide a cartridge storage library, wherein a barcode laser scanner was used to position a robot arm in accessing storage locations. As taught in the application at page 11, lines 1-11, Applicants recognized that there could be significant benefits in using a barcode scanner for this purpose, such as scan engine **604** shown in **Figure 6**. However, Applicants also recognized that a barcode scan engine by itself would produce a scan beam having a width that was variable, or uncontrolled. At page 12, lines 9-15, the application states the following:

> The flexture is a mechanical apparatus within the barcode scan engine that controls the movement of the mirror that reflects the laser light across an area. Since the flexture is mechanical, the movement of the robotic arm **110** during the calibration procedure will affect the flexture causing the scan width **612** to be variable.

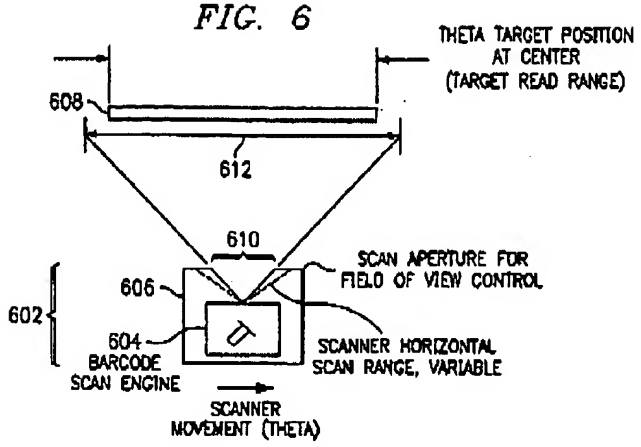
The application further teaches, at page 12, lines 1-4, that variable or uncontrolled width of the scan beam creates a serious problem in using a barcode scanner for Applicants' purpose:

> Furthermore, the scan width of the laser scanner beam from the barcode laser scanner is not controlled. Therefore, the proper calibration measurements cannot be made.

In accordance with their invention, Applicants solved this problem as taught in their application, such as at page 12, lines 4-9, page 12 lines 15-19, and **Figure 6** of their drawings, shown below. More particularly, Applicants contain or substantially enclose the laser barcode scan engine **604** in an aperture **606**, having an aperture opening **610**. The aperture opening **610** is sized to be selectively smaller than the width of the laser light beam produced by the scan engine **604**. As a result, the portion of the beam that passes outward through aperture opening **610**, for use in scanning a target **608**, has a scan width **612** that is uniform, or non-variable.

Referring further to **Figure 6**, there is shown aperture **606** compromising a number of walls positioned around scan engine **604**, including two wall sections positioned on opposing or opposite sides of aperture opening **610**. The inner surfaces of the two wall sections absorb, or otherwise attenuate or reduce the uncontrolled portion of the scan beam produced by scan engine **604**, in order to provide a scan path or scan width element **612** of non-variable width. **Figure 6** shows each of these attenuated uncontrolled beam portions depicted as a dashed line, directed from scan engine **604** to one of the inner surfaces of aperture **606**. One of these dashed lines is labeled "SCANNER HORIZONTAL SCAN RANGE, VARIABLE".

FIG. 6



It will be readily apparent that each of these inner surfaces, of the two wall sections of aperture **606** adjacent to opening **610**, compromises an attenuation surface. It is to be emphasized that each of these attenuation surfaces discloses and supports the attenuation surface recited in Claim 1, as well as in other claims of the application. Moreover, it is to be emphasized that these attenuation surfaces perform an essential function in achieving the purpose of Applicants' invention. For example, at page 12, lines 18-19, after describing the function of the aperture in reducing scan width, which is achieved by means of the attenuation surfaces as described above, the following is stated: "This produces a non-variable scan-width giving a controlled end of scan." (Emphasis added)

A further embodiment of the invention is disclosed at page 13, lines 18-30 of the application, together with **Figure 9** reproduced below. **Figure 9** depicts aperture **606** having two wall sections, above and below the aperture opening, respectively. The upper wall section is specifically referenced as "**606**". In this embodiment, the attenuation surfaces of the aperture wall sections are the sides of the wall sections that are oriented toward scan engine **604**, that is, the left sides of the wall sections as viewed in **Figure 9**. At page 13, lines 23-27, it is taught that the surface of aperture **606** should be provided with a black anodized or black matt powder coating. It will

be readily apparent that if the leftward surfaces of aperture **606** shown in **Figure 9** were provided with such black coating, such surfaces would be made particularly effective in absorbing, scattering or otherwise attenuating portions of the laser light scan beam produced by scan engine **604**.

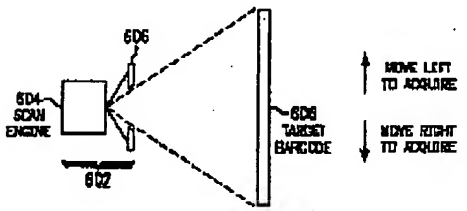


FIG. 9

It is thus seen that the present application teaches that the attenuation surfaces of aperture **606** operate to produce a non-variable scan width **612**, and thereby provide a controlled end of scan. At page 12, lines 20-30, together with **Figure 6**, the application teaches how the controlled end of scan, or non-variable scan width, is used to determine a location of the attenuation surfaces, and also a location of the barcode scanner, with respect to the target **608**. Such section of the application states the following:

To determine the center of the target in the direction parallel to the scan path, the robotic arm **110** is moved in the direction of scan path until the target **608** first becomes readable. This position is recorded through the use of a positional encoding device. The robotic arm **110** continues to move in the same direction until the target is no longer readable by the barcode scanner apparatus **602**. This position is also recorded. The center of the target in the scan path direction is then the half distance position between these two positions.

Figure 6 shows a barcode scanner **602**, comprising scan engine **604** and aperture **606** with its attenuation surfaces, disposed to move rightward as viewed in **Figure 6**. As scanner **602** moves to the right, the scan width element **612** generated thereby is able to read target **608**. It is assumed that scanner **602** with its respective components is affixed to robotic arm **110**, for movement in unison therewith.

Initially, robotic arm **110** and scanner **602** are positioned so that the right end of scan width element **612** is to the left of the left end of target **608**. Scanner **602** is then moved to the right along its path. When the right end of element **612** reaches the left end of target **608**, the target becomes readable, and this position is recorded. Then, when the left end of element **612** moves past the right end of target **608**, the target becomes unreadable, and this position is also recorded. Because the width of the scan element **612** is non-variable, these two positions can be used to determine the location of the robotic arm, and thus the position of scan apparatus **602** and the location of the attenuation surfaces of aperture **606**.

A.4. Examiner's Rejection of Claims 1-11, 15 and 16-22

In rejecting Applicants' Claims 1-11, 15 and 16-22 under 35 U.S.C. § 112, first paragraph, the Examiner stated the following:

> 4. Claims 1-10 and 15-22 are rejected under U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claims(s) contains subject matter, which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.
>
> Re claims 1, 15, and 16, Examiner finds the following phrase difficult to comprehend. "an attenuation surface to the barcode scanner, wherein attenuation surface is located such that at least one end of scan path of the barcode scanner is controlled by the attenuation surface to form a controlled end of scan, and wherein the controlled end of scan, and wherein the controlled end of scan is used to determine a location of the attenuation surface with respect to a target associated with at least one storage cell within a storage library."
>
> It is difficult to find whether attenuation surface is to determine a controlled end of scan or the controlled end of scan determines a location of attenuation surface. In a simplistic sense, if there are two variables which drive each other, actual operation may be in an infinite loop, never reaching the optimal scan path. However, Examiner respectfully request Applicant to clarify the claims or direct the Examiner in the specification if the subject mater actually functions as it is written in the claims.

Office Action dated June 6, 2005, pages 2-3

A.5. Response to Rejection of Claims 1-11, 15 and 16-22

From the teachings of Applicants' specification discussed above, as well as other teachings of the application, key elements of Claim 1 can be summarized as follows:

> (1) The term controlled end of scan, as recited by Claim 1, is simply a condition that is equivalent to or results from a non-variable scan width **612**, which is the width of the scanner beam from scanner **602**. (See Applicants' specification, page 12, lines 18-19 and page 12, lines 1-2).
>
> (2) As recited by Claim 1, a controlled end of scan, and therefore a non-variable scan width, is required to determine location of an attenuation surface (as well as location of a barcode scanner affixed thereto) with respect to a target. (See Applicants' specification, page 12, lines 20-30 and **Figure 6** of Applicants' drawings).
>
> (3) The attenuation surface recited by Claim 1, such as inner surfaces of aperture 606 discussed above, reduces scan beam width, to provide a non-variable scan width, and thus "form a controlled end of scan". (See Applicants' specification, page 12, lines 15-19 and **Figure 6** of Applicants' drawings).

From the above comments of the Examiner, it appears that the only reason for rejecting Claim 1 under 35 U.S.C. § 112, first paragraph, is the Examiner's view that the Claim 1 recitations of "an attenuation surface to form a controlled end of scan" and "the controlled end of scan is used to determine the location of the attenuation surface" somehow are two variables which drive each other. However, Applicants consider it to be very clear that their application does not teach any such inter-related variables.

As discussed above, Claim 1 requires a controlled end of scan, and therefore a non-variable scan width of the scan path, in order to determine location. This essential controlled end of scan is formed by the attenuation surface. However, Claim

1 also recites the attenuation surface to be affixed to the barcode scanner, which is in turn affixed to the robot. Moreover, Figure 6 shows the attenuation surfaces to be integral components of scan apparatus **602**. Thus, the attenuation surface is in fixed relationship with barcode scanner **604**, which provides the scan path of Claim 1. Accordingly, the attenuation surface moves in unison with the barcode scanner and the robot. At the same time, the fixed relationship between the attenuation surface and the barcode scanner is not affected by any such movements. It will thus be readily apparent that neither movement nor relocation affects operation of the attenuation surface of Claim 1, in forming the essential controlled end of scan. As a result, the controlled end of scan is always available, regardless of location of the attenuation surface, for use as described above to determine locations of the attenuation surface, the barcode scanner and the affixed robot.

For at least all the above reasons, Applicants consider the specification of their application to be fully enabling, as required by 35 U.S.C. § 112, first paragraph, in regard to their Claim1.

Independent Claims 15 and 16 are directed to subject matter similar to that recited in Claim 1. Accordingly, Applicants consider their specification to be fully enabling in regard to Claims 15 and 16, for the same reasons given in support for Claim 1.

Claims 2-11 and 17-22 apparently were rejected under 35 U.S.C. § 112, first paragraph, only as being respectively dependent on Claims 1 and 16. Accordingly, Applicants consider their specification to be fully enabling in regard to Claims 2-11 and 17-22, for the same reasons given in support for Claims 1 and 16.

Therefore, it is believed that Applicants' specification is fully enabling, as required by 35 U.S.C. §112, first paragraph, in regard to each of the Claims 1-11, 15 and 16-22. Accordingly, it is respectively requested that the Board reverse the Examiner's final rejection of those claims that is based on lack of enablement.

B. GROUND OF REJECTION 2 (Claims 23, 26 and 29)

Claims 23, 26 and 29 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 6,138,909, to Rockwell et al.

B.1. Examiner's Rejection of Claims 23, 26 and 29

The Office Action of June 6, 2005 rejects Claims 23, 26 and 29 under 35 U.S.C. § 102 (b) as being anticipated by (U.S. Patent No. 6,138,909) to Rockwell et al.

As to Claims 23, 26 and 29, the Office Action states:

> Re claims 23, 26 and 29, Rockwell teaches a robot (see figure 1;col. 1, lines 26+) comprising a gripper 22, a barcode 28 affixed to the data cartridge processor 14 (col. 2, lines 35+), wherein the positional parameters are retrieved from the barcode (col. 3, lines 35+). Since the barcode is affixed on the surface of the cartridge processor 14, it can be said that the surface contributes in determining the scan path.

Office Action dated June 6, 2005, pages 3-4.

B.2. Response to Rejection of Claims 23, 26 and 29

Independent Claim 23 reads as follows:

> 23. A method for determining the position of a robot relative to a target, the method comprising:
>
> moving a robot, having a barcode scan engine with a scan path having a scan path width controlled by an attenuation surface, in a direction substantially parallel to the scan path;
>
> determining a first parallel position at which the target is first readable by the barcode scan engine; and
>
> determining a second parallel position at which the target first becomes unreadable by the barcode scan engine. (emphasis added)

A prior art reference anticipates the claimed invention under 35 U.S.C. § 102 only if every element of a claimed invention is identically shown in that single reference, arranged as they are in the claims. *In re bond*, 910 F .2d 831, 832, 15 U.S.P.Q.2d 1566, 1567 (Fed Cir. 1990). All limitations of the claimed invention must be considered when determining patentability. *In re Lowry*, 32 F.3d 1579, 1582, 21 U.S.P.Q.2d 1031, 1034 (Fed Cir. 1994). Anticipation focuses on whether a claim reads on the product or process a prior art reference discloses, not on what the

reference broadly teaches. Kalman v. Kimberly-Clark Corp., 713 F .2d 760, 218 U.S.P.Q. 781 (Fed. Cir. 1983).

Applicants respectfully submit that Rockwell does not teach every element of the claimed invention arranged as they are in Claim 23. Specifically, Rockwell does not teach a robot having a barcode scan engine with a scan path having a scan path width controlled by an attenuation surface. Rockwell, in fact, does not teach an attenuation surface, let alone a scan path having a scan path width that is controlled by such an attenuation surface. In addition, Rockwell does not teach determining a second parallel position at which the target first becomes unreadable by the barcode scan engine.

According to its Abstract, Rockwell teaches a media handling system that includes a data cartridge processor having an opening to receive a data cartridge. The data cartridge processor functions to read data from or record data to the data cartridge. The system also includes a gripper for inserting the data cartridge into the opening and an actuator to effect movement of the gripper. A code symbol is affixed to the data cartridge processor and a code reader is associated with the gripper to read the code symbol for locating the opening of the data cartridge processor.

Figure 1 of Rockwell is shown below:

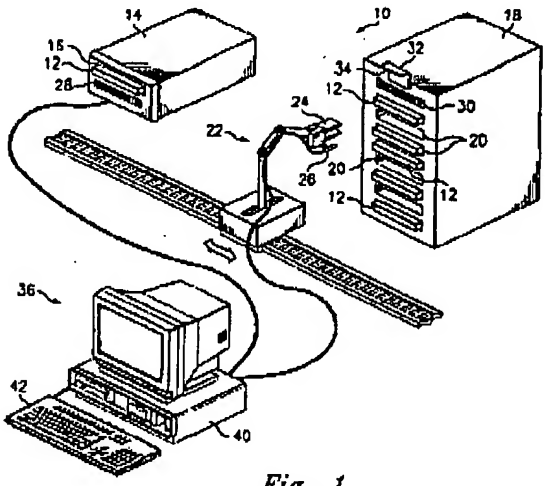


Fig. 1

In **Figure 1**, Rockwell teaches a gripper **22** to which fingers **24** and code reader **26** are affixed. The gripper 22 is provided to move cartridges between a processor 14 and a storage rack 18. However, Rockwell does not teach moving a robot, wherein the robot also includes a barcode scan engine with a scan path having a scan width controlled by an attenuation surface. The gripper **22** in **Figure 1** does not have any attenuation surface affixed to or included in it. Rockwell, in fact, does not teach anything about an attenuation surface for use with a robot, let alone an attenuation surface for controlling the width of a scan path. While the path between data cartridge processor **14** and storage rack **18** may be interpreted to be a scan path, Rockwell still does not teach an attenuation surface that is used to control the scan path width of the scan path.

To the contrary, at column 1, lines 21-34, Rockwell teaches a system controller **36** having an output for controlling an actuator **38**. The system controller **36** comprises computers, workstation, mini-computer, mainframe or other computing device **40**. Thus, the nature of the mechanism that controls the scan path in Rockwell is different from the presently claimed invention, in that Rockwell uses a system controller **36**, which is a computing device, to control the movement of gripper **22**. In Claim 23, the attenuation surface controls the scan path width of the scan path of a barcode scan engine. However, in Rockwell there is simply no attenuation surface that controls the width of the scan path. Rockwell uses a computer to control the movement of the gripper, whereas Claim 23 recites a physical blockage, i.e., the attenuation surface, to control the width of a scan path.

The Office Action also alleges that Rockwell teaches positional features of Claim 23, at column 3, lines 35+. Rockwell, col. 3, line 35 through col. 4, line 7, reads as follows:

> Referring to **FIG. 3**, the media handling system **10** determines offset distances **44** and **45** between the code reader **26** and the fingers **24** with respect to where the code reader **26** is reading. The distances **44** and **45** are determined using one of the code symbols **28** and **30** and the touch stop **34**. For example, the code symbol **28** is affixed to the data cartridge processor **14** so that an edge **46** of the code symbol **28** is located known distances **48** and **49** from edges **50** and **51**, respectively, of the touch stop **34**. The distances **48** and **49** are stored in the memory of the computing device **40** of the system

controller **36** through the operator keyboard **42**. Using the fingers **24**, the gripper **22** locates the edges **50** and **51** of the touch stop **34** and stores the location of edges **50** and **51** in the memory of the computing device **40**. Additionally, the code reader **26** scans or reads the code symbol **28** and stores the location of the edge **46** of the code symbol **28** in the memory of the computing device **40**. The system controller **36** calculates the distance **44** and **45** using the measured distances between the edge **46** and the edges **50** and **51** as determined using the code reader **26** and the fingers **24** and the known distances **48** and **49** stored in the memory of the computing device **40**. Thus, the media handling system **10** accurately position the fingers **24** of the gripper **22** using the code reader.

Once the distances **44** and **45** between the code reader **26** and the fingers **24** are determined, the system controller **36** accurately locates each data cartridge processor **14** and storage rack **18** in the media handling system **10** using the code reader **26**. For example, the code system **28** is affixed to the data cartridge processor **14** so that the edge **46** of the code system **28** is located a predetermined distance from the opening **16**. This predetermined distance is stored in the memory of the computing device **40** of the system controller **24** through the operator keyboard **42**. By locating the edge **46** of the code symbol **28**, distances **44** and **45** are used to accurately align the fingers 24 with the opening **16** of the data cartridge processor **14**. Additionally, each compartment **20** of the storage rack **18** will be accurately located in the similar manner using code symbol **30**.

Figure 3 of Rockwell is shown below:

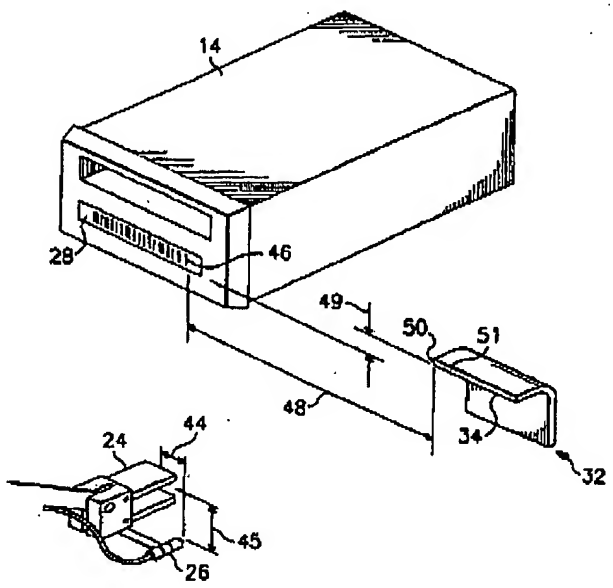


Fig. 3

In the above section, Rockwell teaches measuring distance **48** by locating edge **46** of code symbol **28** and edge **50** of touch stop **34**. Distance **48** between these two edges is parallel to the movement of the gripper **22**. Edge **46** is only one end of code symbol **28**. Therefore, Rockwell only teaches determining a first parallel location of code symbol **28**. Rockwell does not determine a second parallel location of code symbol **28**. Therefore, Rockwell fails to teach the feature of determining a second parallel position at which the target first becomes unreadable by the barcode scan engine, as recited in Claim 23.

Claim 29 is directed to subject matter similar to that of Claim 23, and is considered to distinguish over Rockwell for the same reasons given in support thereof.

For at least all of the above reasons, Applicants respectfully submit that Rockwell does not teach or suggest all of the features of Claims 23 and 29. At least by virtue of its dependency on Claim 23, Rockwell does not teach or suggest the features of dependent Claim 26. Accordingly, it is respectfully requested that the Board reverse the Examiner's final rejection of those Claims 23, 26 and 29.

C. GROUND OF REJECTION 3 (Claims 24-25, 27-28 and 30-34)

Claims 24-25, 27-28 and 30-34 stand rejected under U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,138,909, to Rockwell et al.

Regarding Claims 24-25, 27-28 and 30-34, the Office Action of June 6, 2005 states:

> Re claims 24, 25, 27, 28, and 30-34, as shown in figure 3, the robot retrieves/deposits a data cartridge relying on positioning the device according to offset value 44, and 45 from the (col. 3, lines 35+). Location of the left edge 46 is stored along with the barcode information (col. 3, lines 49+). Although not explicitly suggested, it is obvious to one ordinary skill in the art to store location of right edge, or calculate center/mid point using locations of right and left edges.

Office Action dated June 6, 2005

While Rockwell teaches determining the location of one edge of a code symbol, Rockwell does not teach or suggest determining the center of the target in the parallel direction (Claims 24, 30), assigning a position halfway between first and

second parallel positions as the center position of the target in the parallel direction (Claims 25, 31), determining the center of the target in the perpendicular direction from the first and second perpendicular positions (Claims 27, 33), or assigning the midpoint between the first and second perpendicular positions as the center of the target in the perpendicular direction (Claims 28, 34).

As described in previous arguments presented for claims 23 and 29, Rockwell does not teach or suggest determining the location of a second parallel location of the target. It would not have been obvious to one of ordinary skill in the art to determine the center of the target by assigning a position halfway between first and second positions, because without first determining the location of the second edge of the target, the center or midpoint of the target may not be determined.
In addition, a person of ordinary skill in the art would not have been motivated by Rockwell to determine the location of the second edge, since Rockwell is only concerned with using one edge of the code symbol to measure the distance between the code symbol and the touch stop. Rockwell is not concerned with determining the center or midpoint of the code symbol. Therefore, a person of ordinary skill in the art would not be motivated to determine the location of the second edge of the code symbol in order to determine the center of the target, without the disclosure of the Applicants.

For at least all the above reasons, Claims 24-25, 27-28 and 30-34 are respectively considered to distinguish over the Rockwell patent. Accordingly, it is respectfully requested that the Board reverse the Examiner's final rejection of those claims.

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CLAIMS APPENDIX

The text of the claims involved in the appeal are:

1. A robot, the robot comprising:

a barcode scanner with a scan path, wherein the barcode scanner is affixed to the robot;

an attenuation surface affixed to the barcode scanner, wherein the attenuation surface is located such that at least one end of the scan path of the barcode scanner is controlled by the attenuation surface to form a controlled end of scan, and wherein the controlled end of scan is used to determine a location of the attenuation surface with respect to a target associated with at least one storage cell within a storage library.

2. The robot as recited in claim 1, wherein the attenuation surface comprises a plurality of edges and wherein at least one of the edges are beveled.

3. The robot as recited in claim 1, wherein the attenuation surface is constructed from a material that is formable into sharp edges.

4. The robot as recited in claim 1, wherein the attenuation surface reflects light from a scanner illumination source in a non-detrimental manner.

5. The robot as recited in claim 1, wherein the attenuation surface controls one or more ends of the scan path during movement of the robot parallel to the scan path in order to determine a target position in a first coordinate frame.

6. The robot as recited in claim 1, wherein the movement of the barcode scanner substantially orthogonal to the scan path will determine the target position relative to positional data from the robot in a second coordinate frame.

7. The robot as recited in claim 1, wherein the target is a barcode.

8. The robot as recited in claim 1, wherein the attenuation surface comprises a metal.

9. The robot as recited in claim 1, wherein the attenuation surface is black anodized.

10. The robot as recited in claim 1, wherein the barcode scanner is a laser scanner.

11. The robot as recited in claim 10, wherein the laser scanner comprises:

a laser; and

a moveable reflecting surface which reflects light from the laser to an object external to the laser scanner.

15. A positional determination device, the device comprising:

a barcode scanner with a scan path affixed to a moveable object;

an attenuation surface affixed to the barcode scanner, wherein the attenuation surface is located such that at least one end of the scan path is controlled by the attenuation surface to form a controlled end of scan, wherein the controlled end of scan is used to determine a location of the object with respect to an external object.

16. A library storage system, the system comprising:

a plurality of storage cells, wherein at least some of the plurality of storage cells include a target;

a robot for moving items to and from the storage cells, wherein the robot includes a barcode scanner with a scan path, an attenuation surface, wherein the attenuation surface is located such that at least one end of the scan path is controlled by the attenuation surface to form a controlled end of scan, wherein the controlled end of scan is used to determine a location of the attenuation surface with respect to the target.

17. The library storage system as recited in claim 16, wherein at least one of the edges of the attenuation surface is beveled.

18. The library storage system as recited in claim 16, wherein the attenuation surface is constructed from a material that is formable into sharp edges.

19. The library storage system as recited in claim 16, wherein the attenuation surface is configured to reflect a scanner illumination source in a non-detrimental manner.

20. The library storage system as recited in claim 16, wherein the attenuation surface controls at least one end of the scan path during movement of he robot parallel to the scan path to determine target position in a first coordinate frame.

21. The library storage system as recited in claim 16, wherein the movement of the barcode scanner substantially orthogonal to the scan path determines the target position relative to positional data from the robot in a second coordinate frame.

22. The library storage system as recited in claim 16, wherein the target is a barcode.

23. A method for determining the position of a robot relative to a target, the method comprising:

moving a robot, having a barcode scan engine with a scan path having a scan path width controlled by an attenuation surface, in a direction substantially parallel to the scan path;

determining a first parallel position at which the target is first readable by the barcode scan engine; and

determining a second parallel position at which the target first becomes unreadable by the barcode scan engine.

24. The method as recited in claim 23, further comprising:

determining the center of the target in the parallel direction from the first and second parallel positions.

25. The method as recited in claim 24, wherein the step of determining the center of the target in the parallel direction comprises assigning a position halfway between the first and second parallel positions as the center position of the target in the parallel direction.

26. The method as recited in claim 23, further comprising:

moving the robot in a direction substantially perpendicular to the scan path;

determining a first perpendicular position at which the target first becomes readable to the barcode scanner; and

determining a second perpendicular position at which the target first becomes unreadable by the barcode scanner.

27. The method as recited in claim 26, further comprising:

determining the center of the target in the perpendicular direction from the first and second perpendicular positions.

28. The method as recited in claim 27, wherein the step of determining the center of the target in the perpendicular direction comprises assigning the midpoint between the first and second perpendicular positions as the center of the target in the perpendicular direction.

29. A system for determining the position of a robot relative to a target, the system comprising:

first means for moving a robot, having a barcode scan engine with a scan path having a scan path width controlled by an attenuation surface, in a direction substantially parallel to the scan path;

second means for determining a first parallel position at which the target is first readable by the barcode scan engine; and

third means for determining a second parallel position at which the target first becomes unreadable by the barcode scan engine.

30. The system as recited in claim 29, further comprising:

fourth means for determining the center of the target in the parallel direction from the first and second parallel positions.

31. The system as recited in claim 30, wherein the fourth means comprises assigning a position halfway between the first and second parallel positions as the center position of the target in the parallel direction.

32. The system as recited in claim 29, further comprising:

fourth means for translating the robot in a direction substantially perpendicular the scan path;

fifth means for determining a first perpendicular position at which the target first becomes readable to the barcode scanner; and

sixth means for determining a second perpendicular position at which the target first becomes unreadable by the barcode scanner.

33. The system as recited in claim 32, further comprising:

seventh means for determining the center of the target in the perpendicular direction from the first and second perpendicular positions.

34. The system as recited in claim 33, wherein the seventh means comprises assigning the midpoint between the first and second perpendicular positions as the center of the target in the perpendicular direction.

EVIDENCE APPENDIX

There is no evidence to be presented.

RELATED PROCEEDINGS APPENDIX

There are no related proceedings.